MODEL ANALYSES AND GUIDANCE (MAG) APPLICATION

MAG User's Manual
(Documentation Version 3.4)

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Prepared by:
Systems Integration Branch/Software Development Team
NCEP Central Operations
NOAA

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Introduction

The Model Analysis and Guidance website displays a graphical depiction of products available from the National Weather Service's (NWS) Numerical Weather Prediction computer models. The website offers a professional and interactive interface, which showcases the NWS observational database and suite of numerical model analysis and guidance. In an effort to respond to user needs, to protect life and property, and support the nation's growing need for environmental information; a streamlined graphical approach displaying products in making forecasts will serve not only NWS Offices but also the Private and Public Sectors.

The Model Analyses and Guidance (MAG) website is available at **http://mag.ncep.noaa.gov**

MAG home page

The MAG website's Home page presents the user with the choice of three categories:

- **Model Guidance**: Provides a path to view products created from the National Weather Service's (NWS) numerical model output including regional and global models.
- **Observations and Analyses** : Provides a path to view the Real-Time Mesoscale Analysis (RTMA) products, Upper Air(UAIR) Height Plots, and Upper Air Sounding Plots (Skew T plots)
- **Tropical Guidance**: Provides a path to view products created by the National Weather Service's Tropical Cyclone models. These products are only available when tropical cyclones that meet stated criteria are active in the Atlantic or Pacific areas.

Site users can obtain a description for each category by hovering the mouse pointer over each selection. A text window appears further describing each category.
The world map graphic displays a rectangle around each geographic area selected in the Model Guidance and Observations and Analyses pages. When a user clicks on the map, at the home page, a text box appears alerting the user to "Select Model Guidance, Observations and Analyses, or Tropical Guidance".

Users can access the following information by clicking the links below the world map or expanding the Website Information menu at the top right of the main page:

- Upcoming Changes – A list of changes, improvements and fixes to the site. These are most often derived from requests and inquiries from our user community.
- Users Guide – This document.
- Frequently Asked Questions – A list of questions from our user community where issues are encountered that are outside the control of the web application programmer. These may be related to system configuration tips, or required software and browser plug-ins to quirks we have noted or that have been reported with a particular browser model or version.
- Product Description Document – A document describing the models themselves and the products, the combination of meteorological fields that comprise each product, and the geographic areas covered by each model.

A schedule of proposed changes and the latest news are available by clicking the link: "Check here for the latest news" near the top of the page, below the page title.

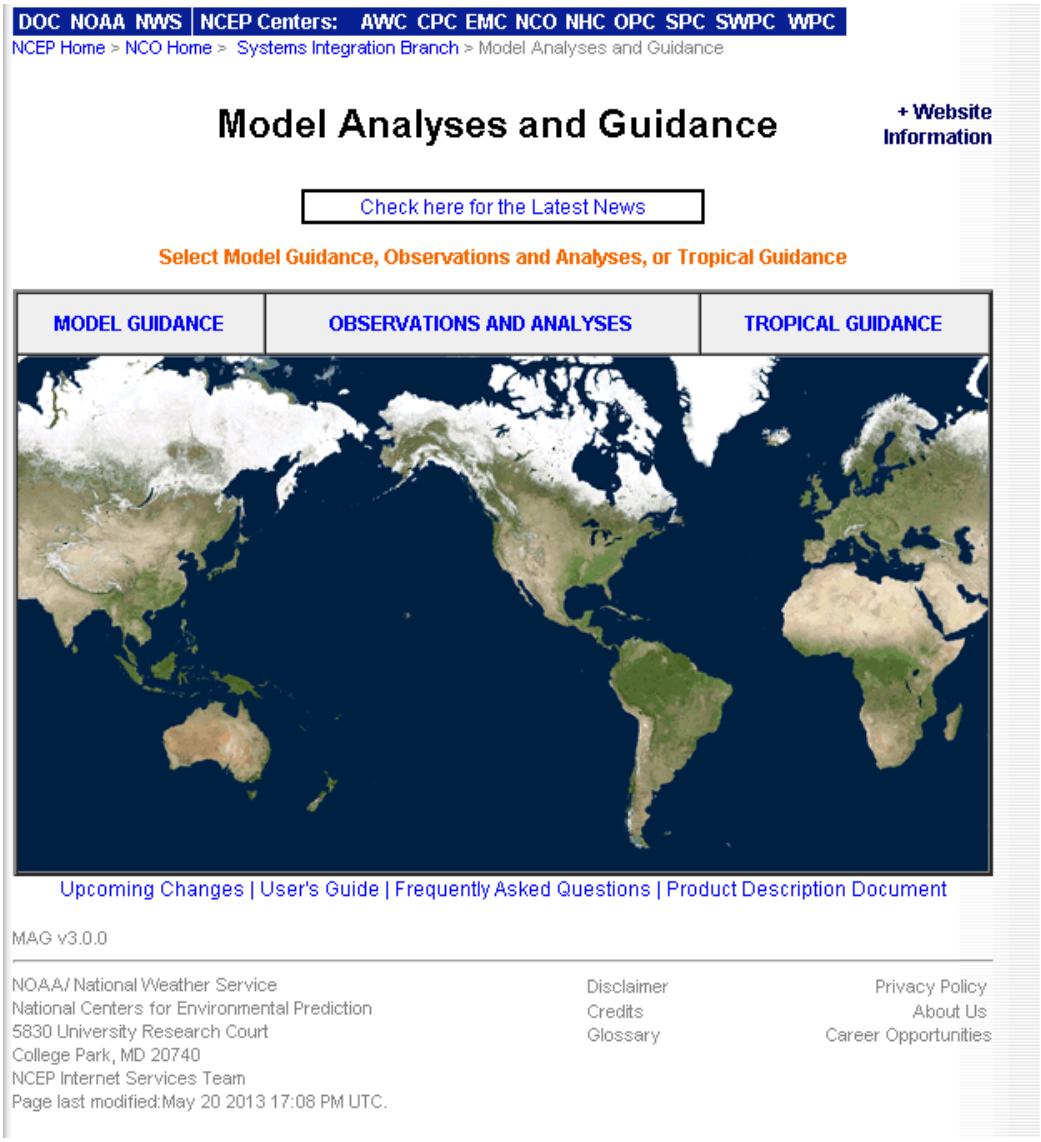


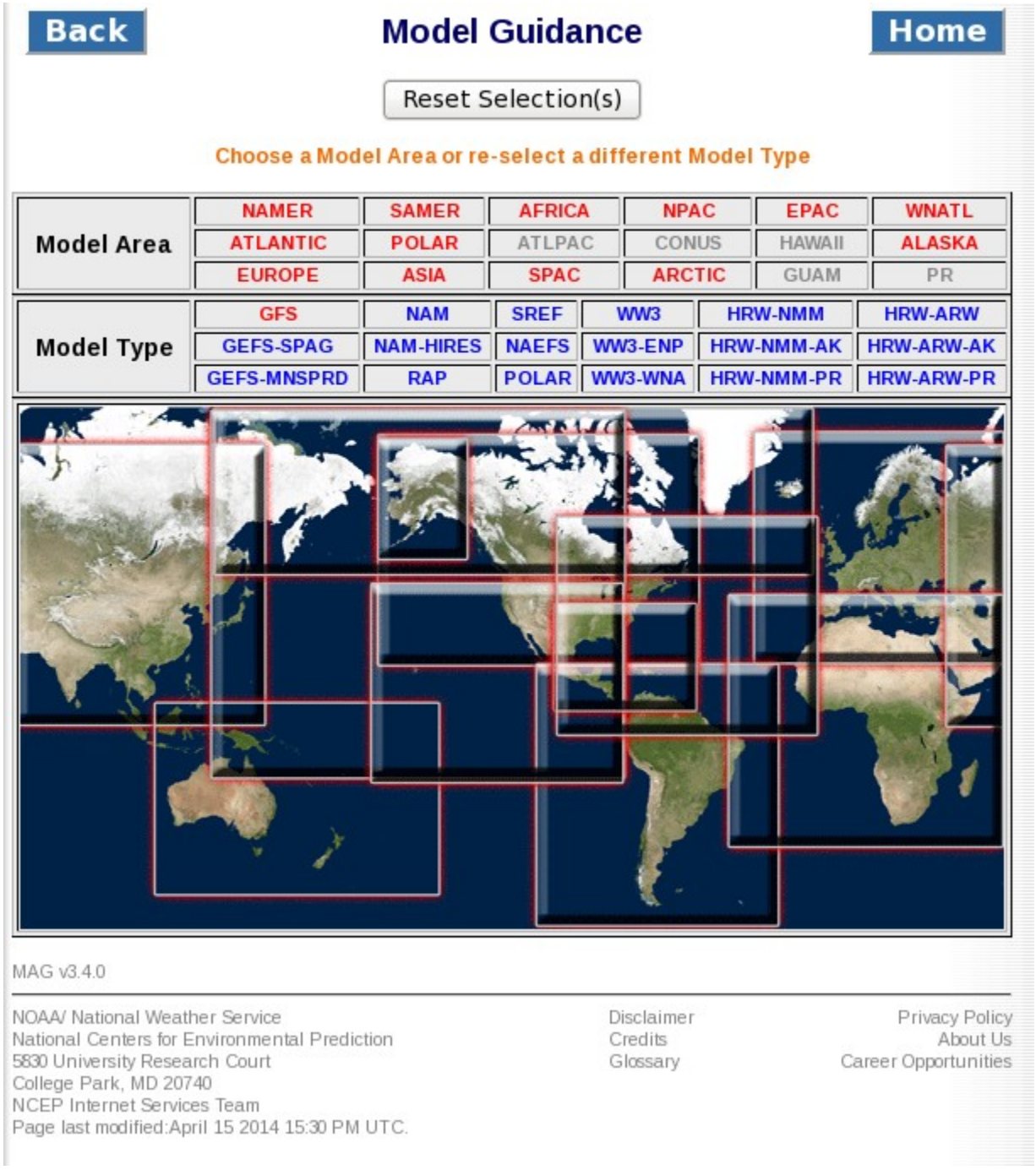
Figure 1: MAG home page

Model Guidance Page:

The user arrives on this page by clicking on the 'Model Guidance' category from the main index page. (See Figure 2)

- Select the model name of choice from the model list
- Select region of choice from the region list
  Note: The application automatically highlights the regions that are available for a selected model in red. All other regions are un-selectable and gray.
- If the user selects a region first, then the models that are available for the selected region are highlighted in red while all other models are un-selectable and gray.
- Click the button 'Reset Selection' to reset choices made in the Model Area or Model Type lists.
- Click the 'Back' button to go back to the main page.
- Click the 'Home' to return to the main page.
- To get a brief description of any of the models/regions, hover over the mode/region names, and a tool tip will appear with a description.

After the user has made the selection for Model and Region, the Parameter page (see Figure 3) for the chosen model/region is displayed.



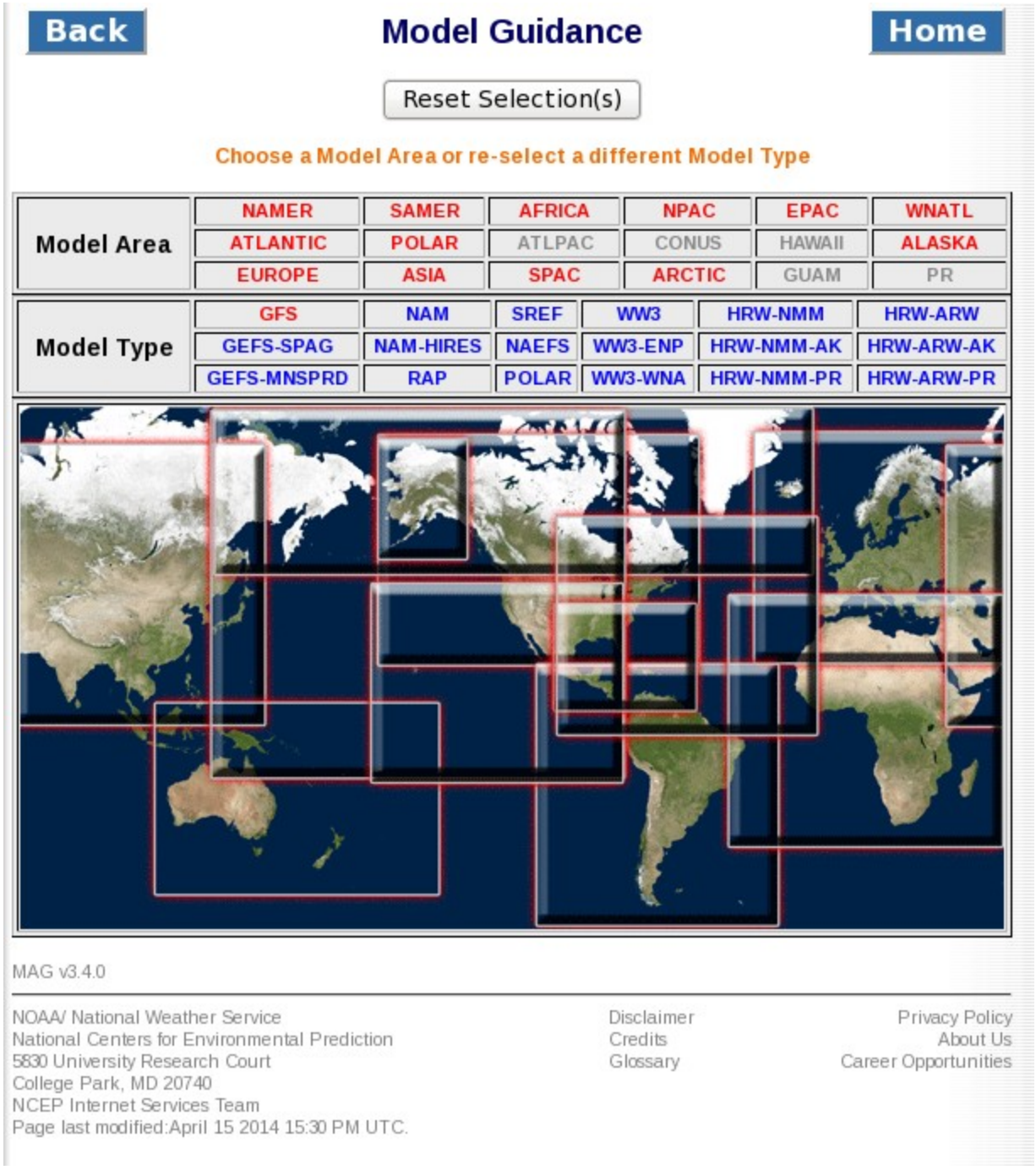


Figure 2: Model Guidance page

Model Guidance Parameter Page:

The user is presented with the parameter page after the Model and Region are chosen from the Model Guidance page. In this section, the Parameter Page is explained after the user chooses a model (i.e. GFS) and region (i.e. Namer).

The Parameter Page presents the user with

- The parameter names available for a selected Model and Region.
- The available model cycles. Note: the cycles are displayed with the latest cycle as the default and is displayed on the right most cell and is highlighted in white
- The available forecast hours are displayed in the dropdown list (see Figure 5), the default is 'Loop All' of the available forecast hours (see Figure 4).

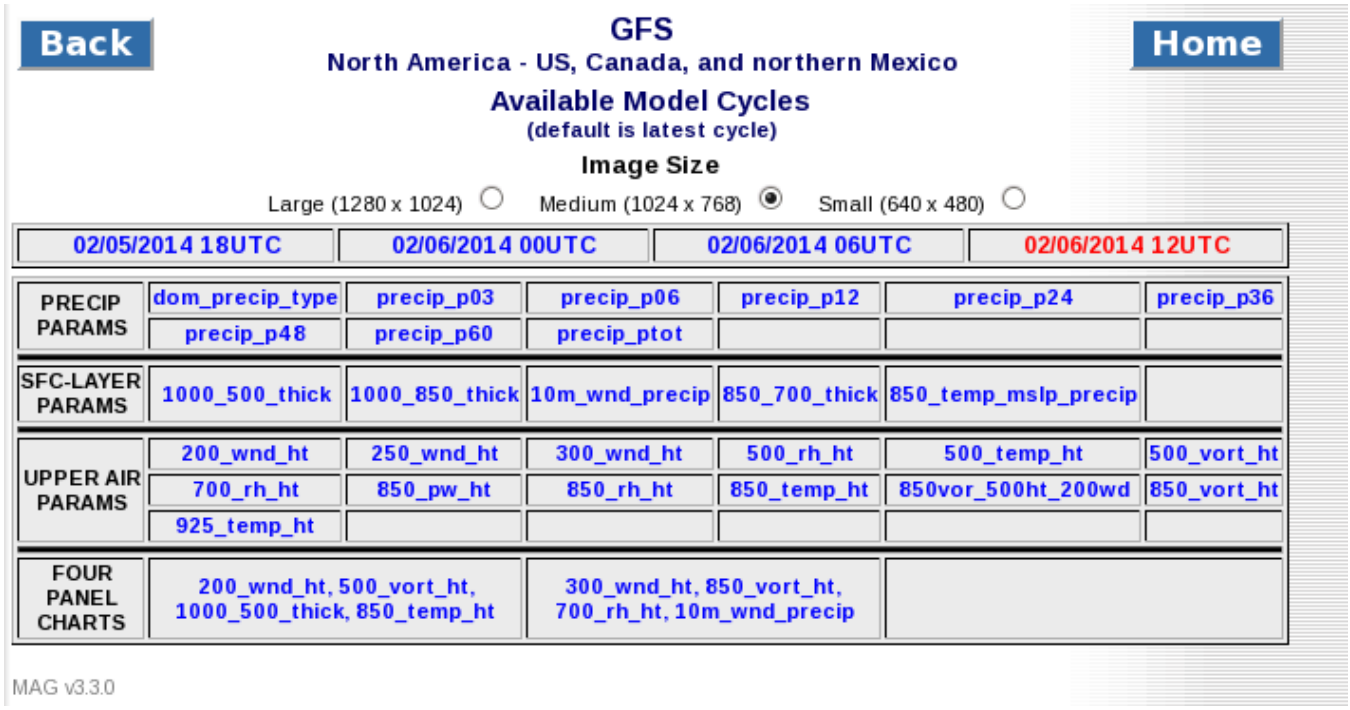


Figure 3: Parameter page for model ='GFS' and region = 'Namer'

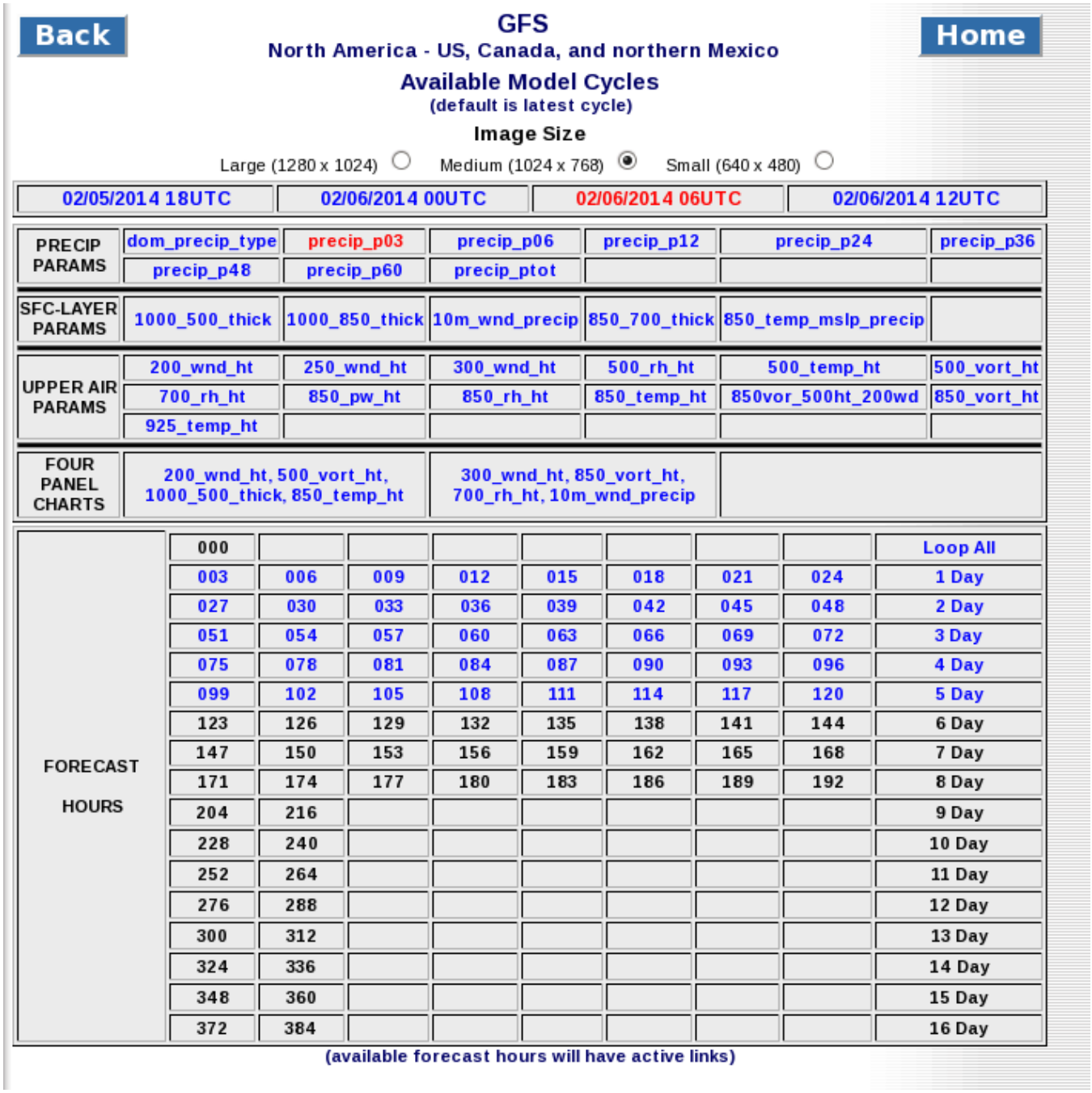


Figure 4: Parameter page with available forecast hours & loops (once parameter is chosen)

To view the graphics for any parameter:

- Select the
    1. parameter name
    2. model cycle
    3. forecast hour or loop option

User selection is highlighted in red.

- Once all the above three selections have been made the page automatically redirects to the graphics display page If the selection is 'Loop All' or "1/2/3/4/5 Day loop", then the user is presented with a JavaScript animation page that loops through all the images for all forecast hours as shown in Figure 6. If a distinct forecast hour is chosen, the user is shown a gif image as seen in Figure 5.

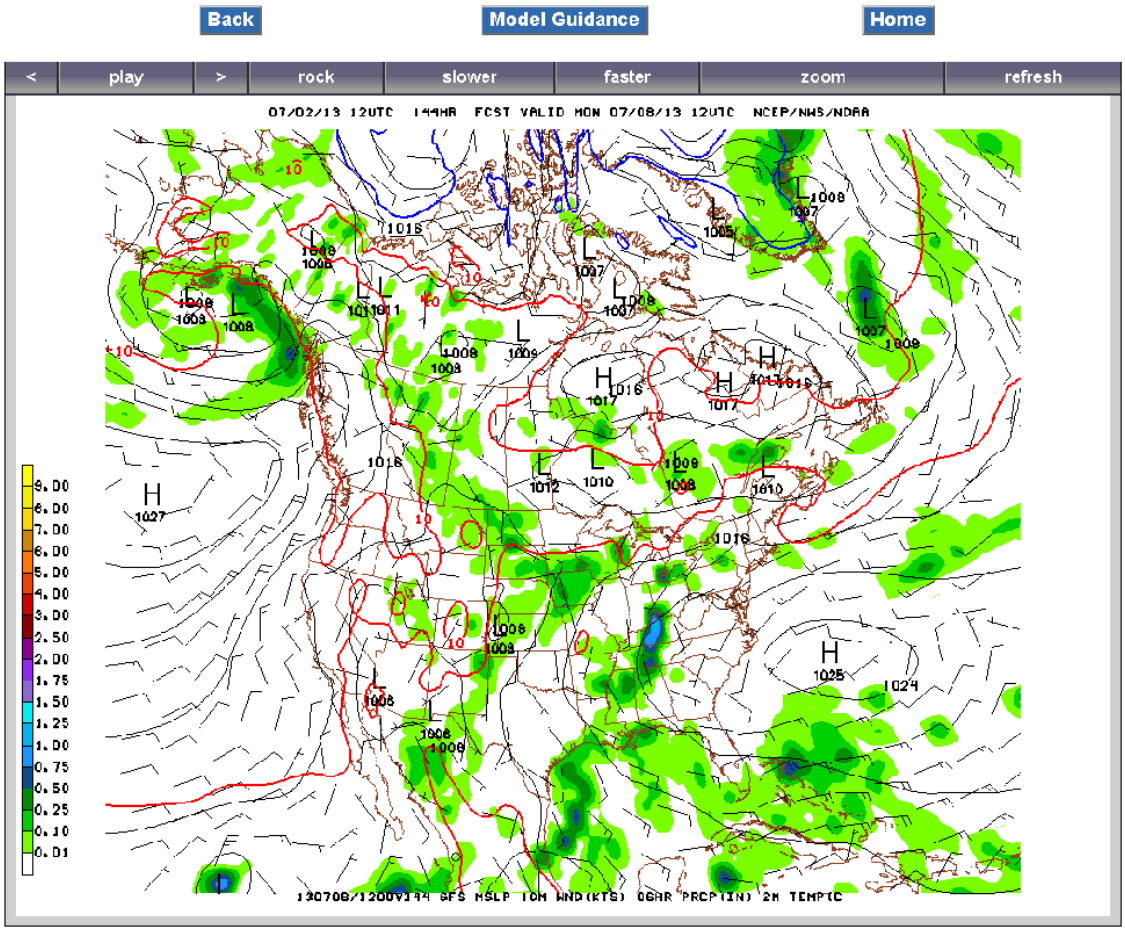


Figure 5: JavaScript Application to view the graphics in a loop

JSani, a JavaScript based animation application has replaced the Flash based application, and the earlier Java based application for displaying forecast hours from the models as a progressive series of images. The JSani application was built and is maintained by Bill Bellon of the University of Wisconsin-Madison Space Science & Engineering Center (SSEC).

More information about the software can be found at http://www.ssec.wisc.edu/~billb/jsani

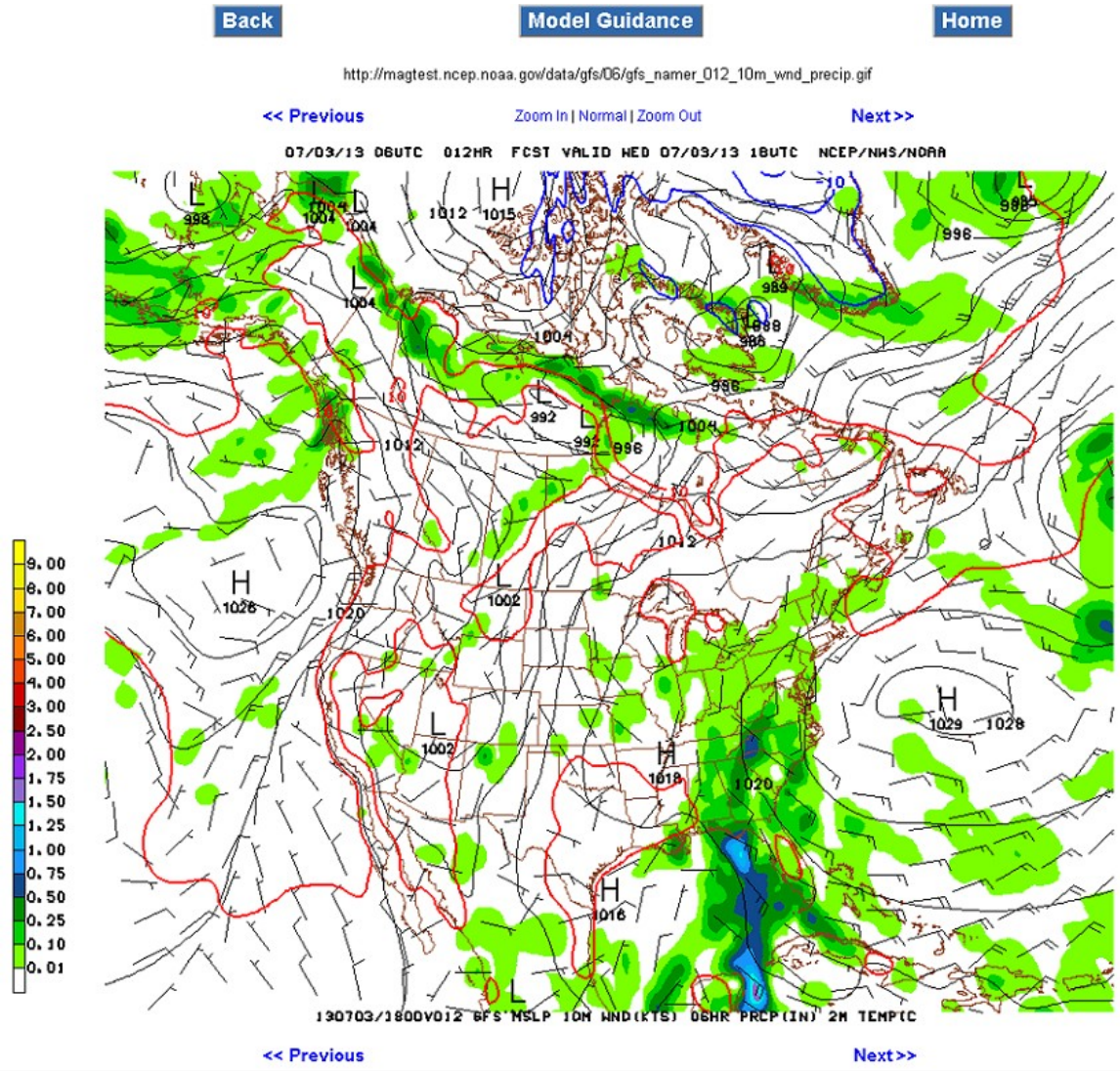


Figure 6: Graphics page for a selected forecast hour

The user can zoom-in/zoom-out or choose a Normal size of viewing the image by clicking on the "Zoom In | Normal | Zoom Out " links, provided just above the image.

The static URL to view the image is provided just below the title of the page.

Observations and Analyses Page:

The user can choose the “Observations and Analyses” category from the MAG home page to get to the Observations and Analyses page

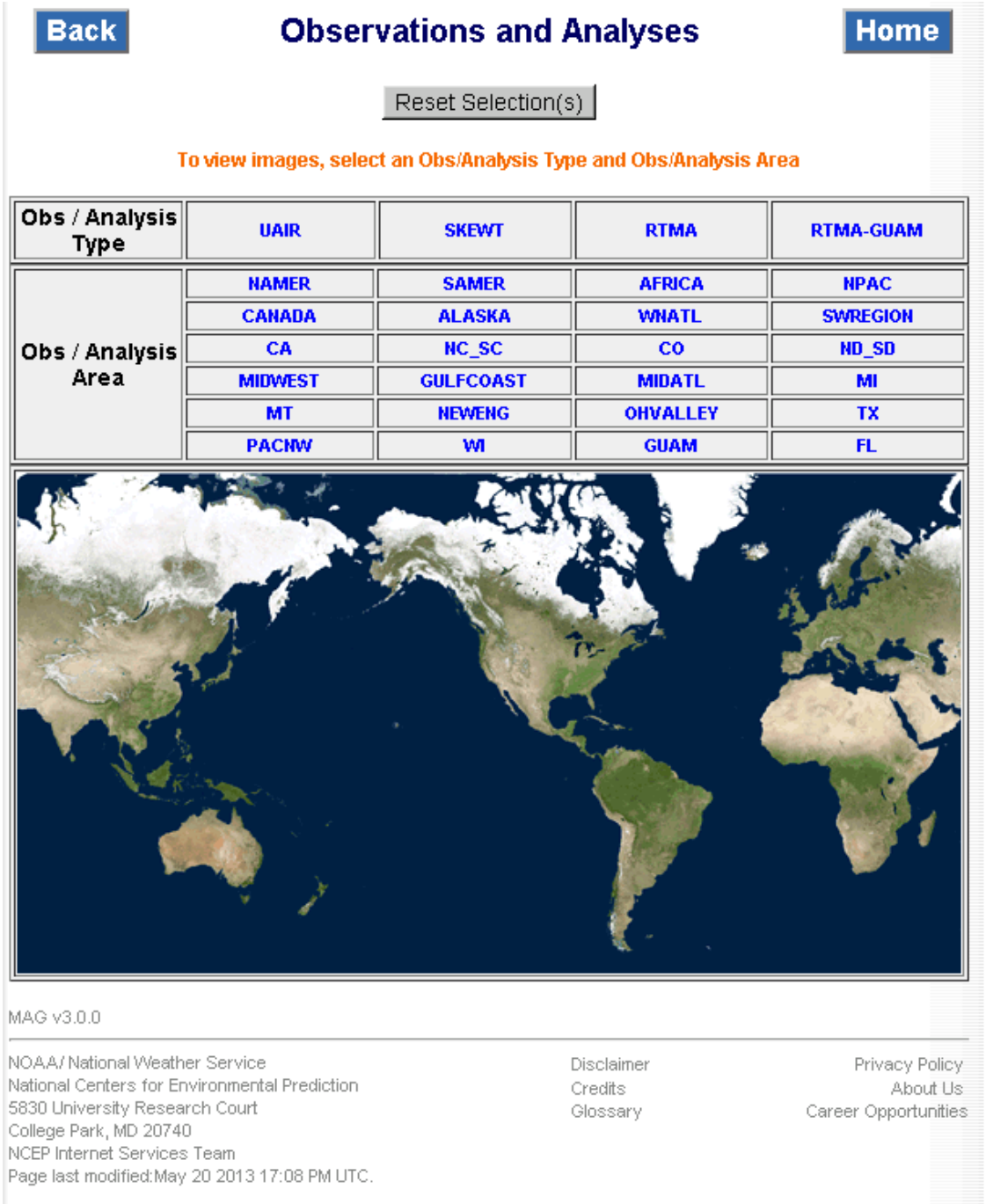


Figure 7: Observations and Analyses Page

This page (see Figure 7) provides the user with three types for Obs/Analyses :

- UAIR (Upper Air)
- SKEWT (Skew-T plots)
- RTMA (Real Time Mesoscale Analysis)
- RTMA-GUAM (Real Time Mesoscale Analysis for the Guam region)

Observations and Analysis page for UAIR

When the user selects UAIR, the regions corresponding to Upper Air gets highlighted in red and the other regions are deselected and greyed out as shown in Figure 8.

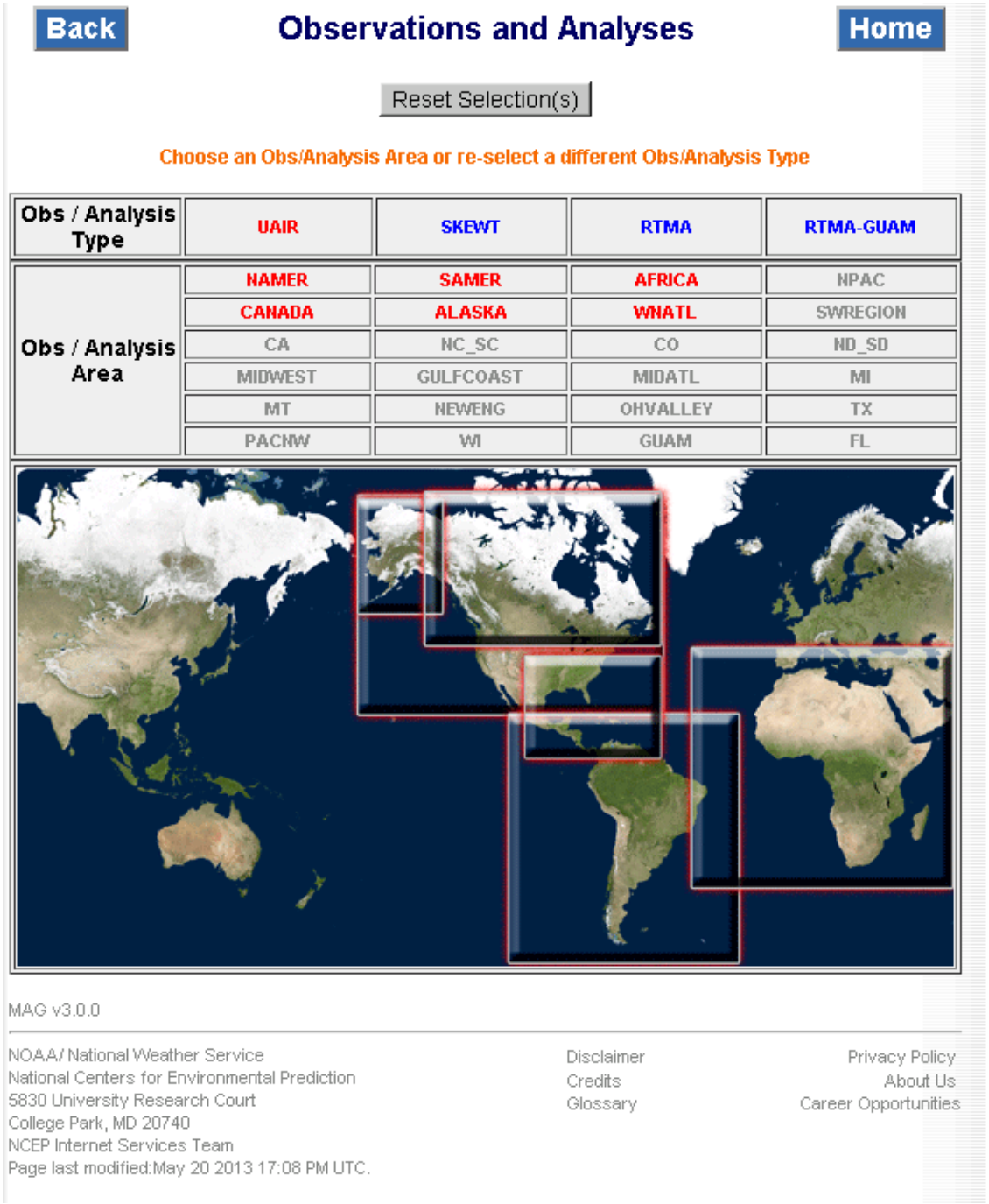


Figure 8: Observations and Analyses page for UAIR

To view the Upper Air Parameters, select a region of choice.

Note: The user can also choose a region first, and the corresponding Obs/Analysis Type is highlighted in red. The other types are "grayed out" / deselected.

UAIR parameter page:

In this section, the Upper Air parameter page is explained when the user selects North America (Namer) as region of interest (see Figure 10). The page presents all the available model cycles in one row. The next row presents the available mandatory levels in millibars.

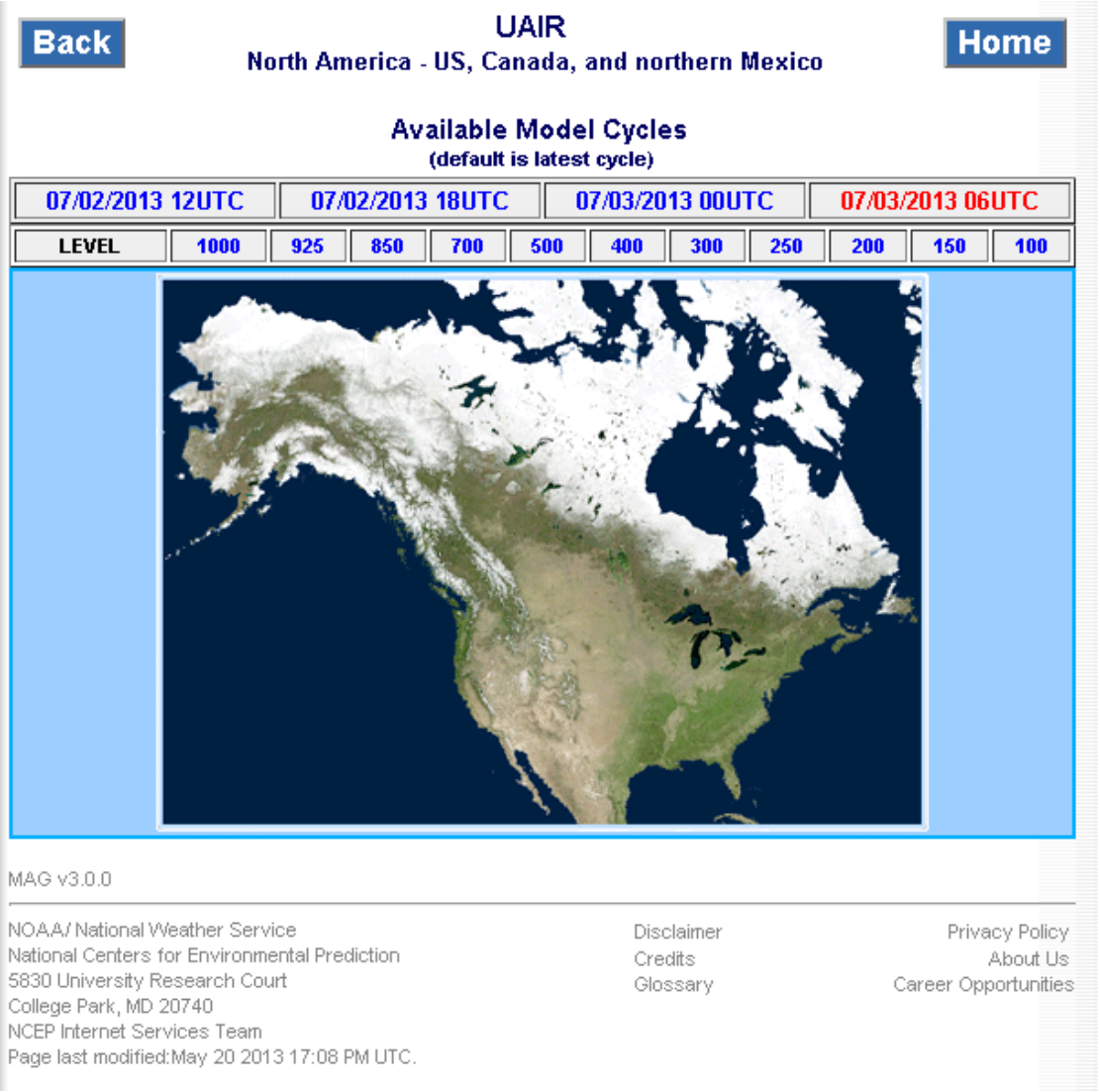


Figure 9: UAIR page for region 'Namer'

- Select any 'Available Model Cycles'. Note: the default is always highlighted in red and is displayed in the right most cell.
- Select a mandatory level.
- The user is presented with the graphic similar to what is shown in Figure 10.

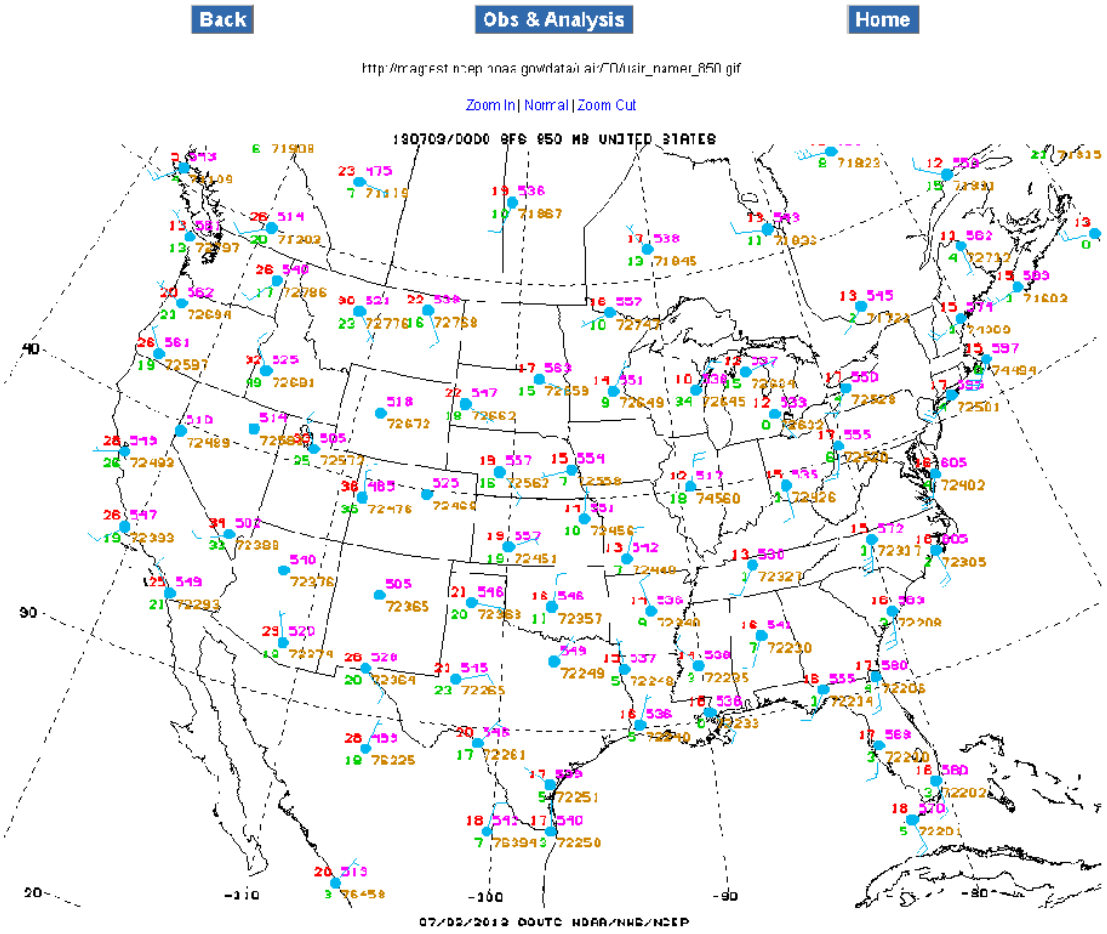


Figure 10: Upper Air graphics page

The user can zoom-in/zoom-out or choose a Normal size of viewing the image by clicking on the "Zoom In | Normal | Zoom Out " links provided just above the image.

The static URL to view the image is provided just below the title of the page.

Observations and Analysis page for Skewt-t Plots

This section describes the usage of the MAG application to view Skew-t plots.
Select the Observations/Analyses Type “SKEWT” from the Observations and Analyses page.

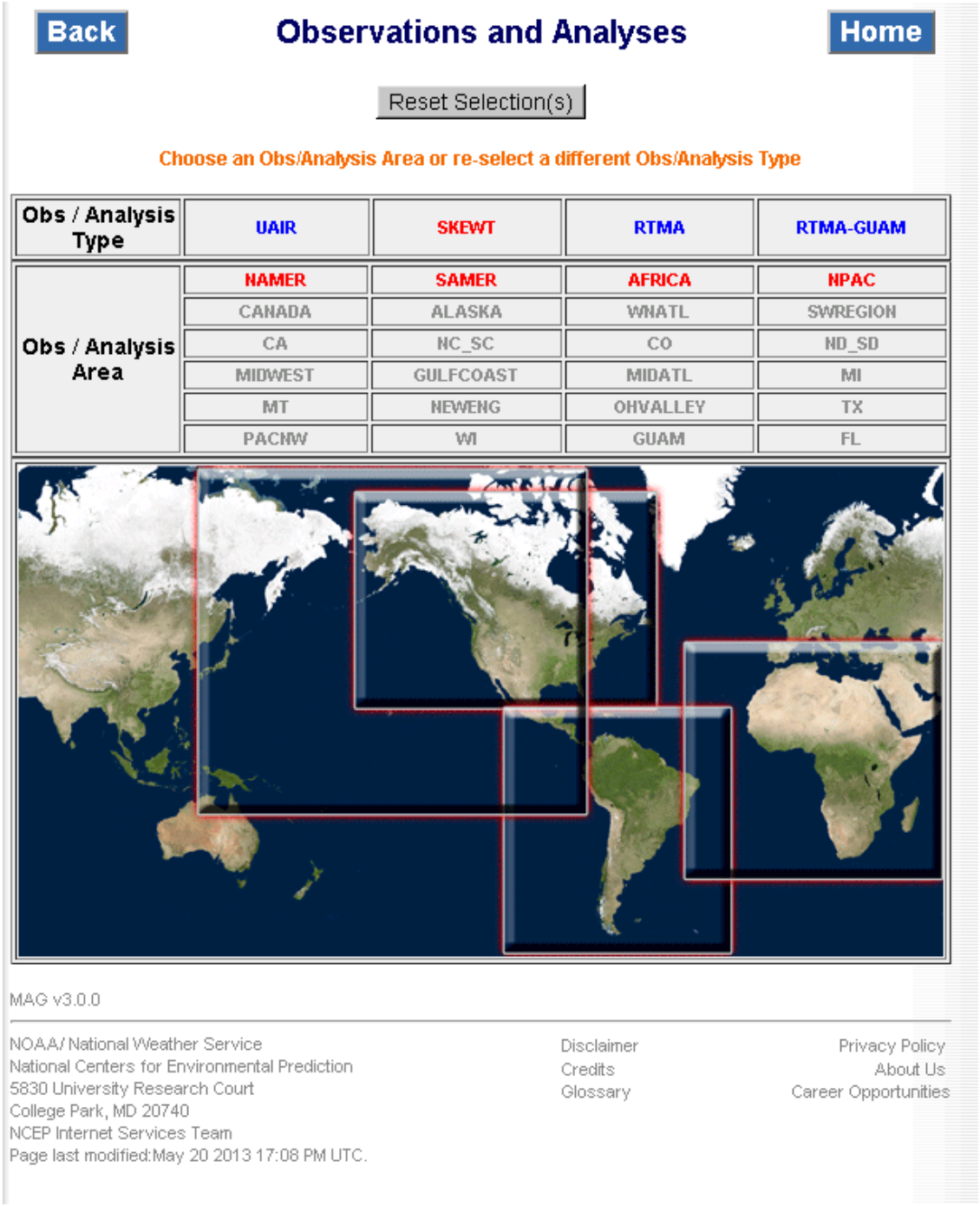


Figure 11: Obs/Analyses page for Skew-t plots

The regions that correspond to the SKEWT type get highlighted in red.
Select a region.

Skew-T Parameter Page

Figure 12 below shows the Skew-t page for region North America (Namer). The page presents the available cycles, with the default being the latest cycle and is displayed in the right most cell highlighted in red.

Select the desired cycle, and the user is presented with the skewt-t plot as shown in Figure 13.

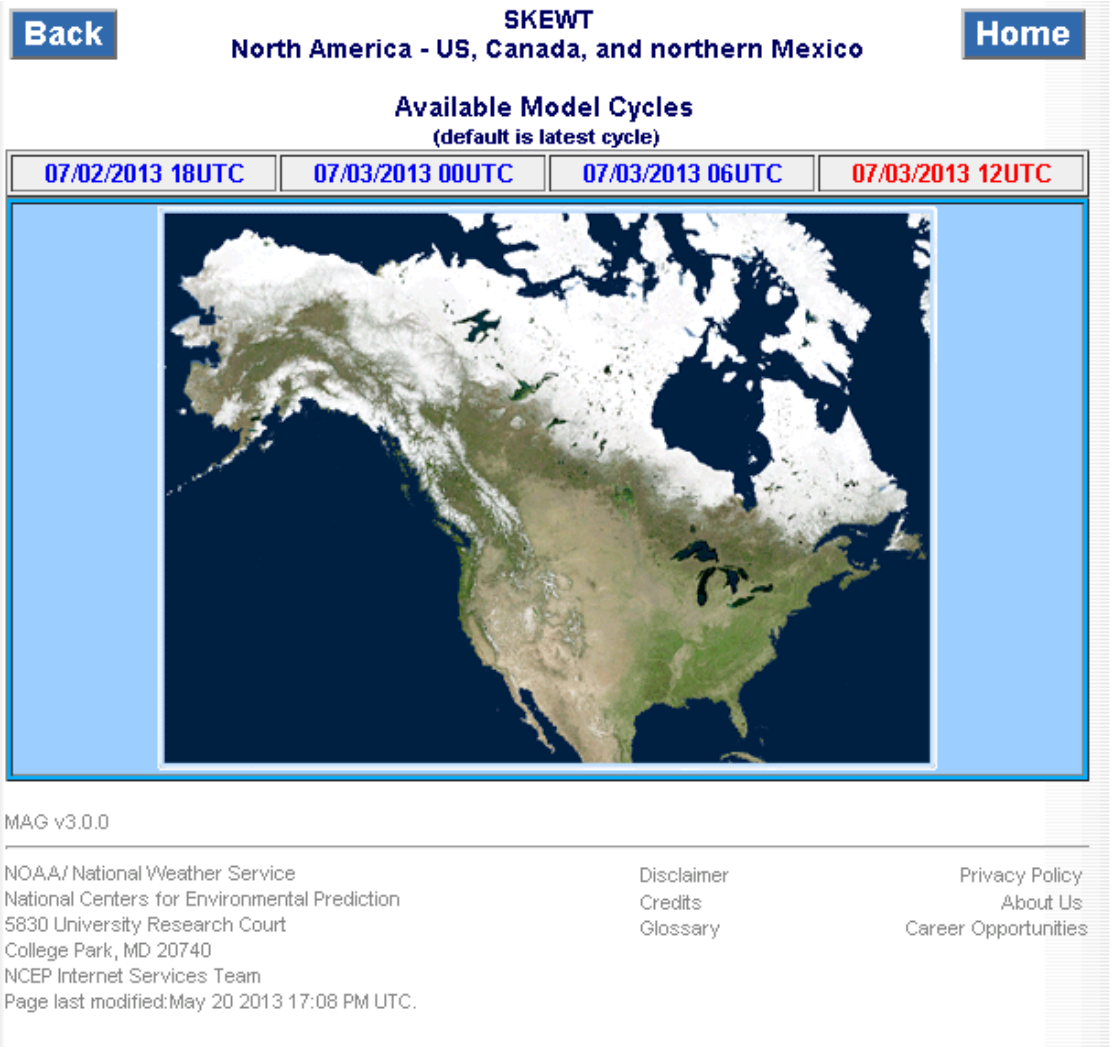


Figure 12: Skew-T page for region "NAMER"

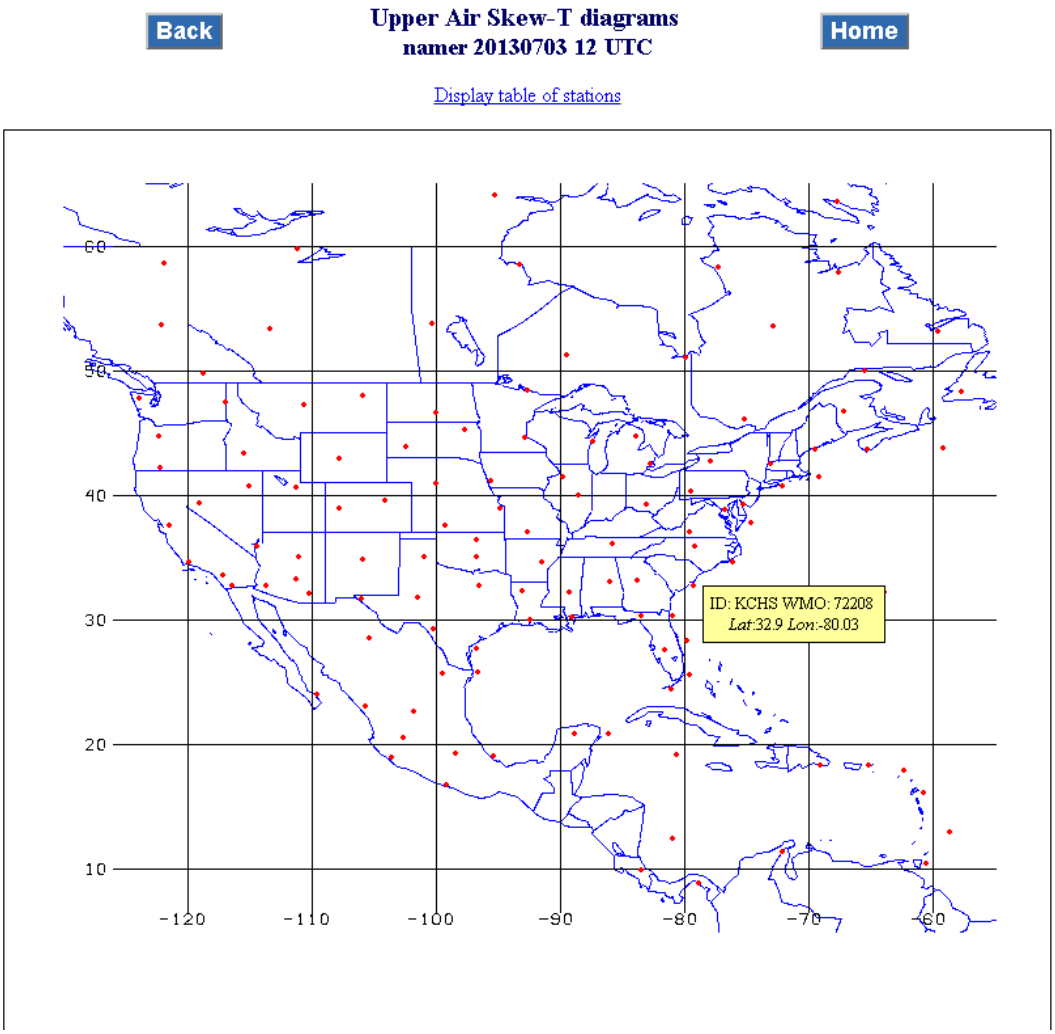


Figure 13: Skew-t plot

The user can click on the red dots, which represent various stations, to view the graphic. The user is presented with skew-t graphics as shown in Figure 14.

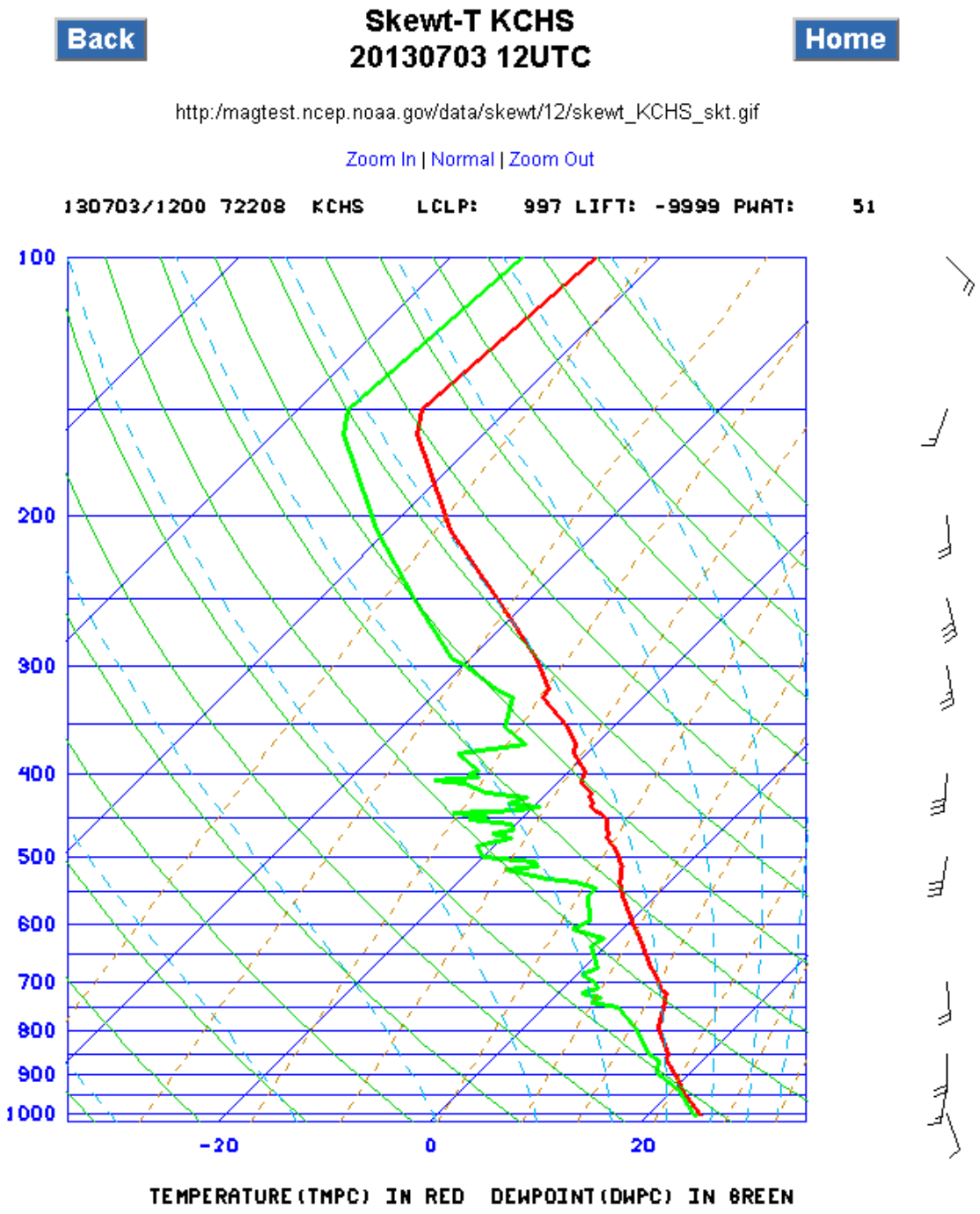


Figure 14: Skew-T graphics

Note: The display of Skew-T graphics available can be listed in a table rather than on a map. When the user chooses a desired cycle, click on the hypertext link “Display Table of Stations” to get a list of stations (as shown in Figure 16) instead of the regional map with red dots representing the various stations.

ID	Latitude	Longitude	Country code	WMO block/station
FAPE	-33.98	26.62	ZA	688420
FACT	-33.97	18.60	ZA	688160
FADY	-30.67	24.00	ZA	685380
FABL	-29.10	26.30	ZA	684420
68312	-26.53	18.12	NM	68312
FAIR	-25.92	28.22	ZA	682630
FMSD	-25.03	46.95	MG	671970
FYWW	-22.57	17.10	NM	681100
FMMI	-18.80	47.48	MG	670830
61901	-15.93	-5.67	HE	61901
FCPP	-4.82	11.90	BC	644000
FOOL	0.47	9.42	GO	645000
FKKD	4.00	9.73	CM	649100
DIAP	5.25	-3.93	IV	655780
HAAB	9.03	38.75	ET	634500
DFFD	12.35	-1.52	HV	655030
DRRN	13.48	2.17	NR	610520
GOTT	13.77	-13.68	SG	616870
GOOY	14.73	-17.50	SG	616410
DRZA	16.97	7.98	NR	610240
GQNN	18.10	-15.95	MT	614420
GQPP	20.93	-17.03	MT	614150
60680	22.78	5.52	AL	60680
HESN	23.97	32.78	EG	624140
62403	26.20	32.75	EG	62403
62423	27.05	27.98	EG	62423
60630	27.23	2.50	AL	60630
DAOF	27.70	-8.17	AL	606560
60018	28.32	-16.38	CR	60018
HEMM	31.33	27.22	EG	623060
DAOR	31.62	-2.23	AL	605710
DTTZ	33.92	8.10	TS	607600
DAAG	36.72	3.25	AL	603900
DTTA	36.83	10.23	TS	607150

Figure 15: Station table for Skew-T graphics

The user can click on the station code to view the skew-T graphic.

Observations and Analysis page for RTMA(Real-time Mesoscale Analysis Model) and RTMA-GUAM

When the user selects the 'RTMA' Obs/Analyses type from the Observations and Analyses page, the corresponding regions available for RTMA get highlighted in white. The remaining regions are de-selected. When the user selects a region of choice, the user is presented with the RTMA page as shown in Figure 16.

RTMA-GUAM is another model type provided specifically for the Guam region. The user interface provided for the Guam region is the same the other regions for the RTMA model.

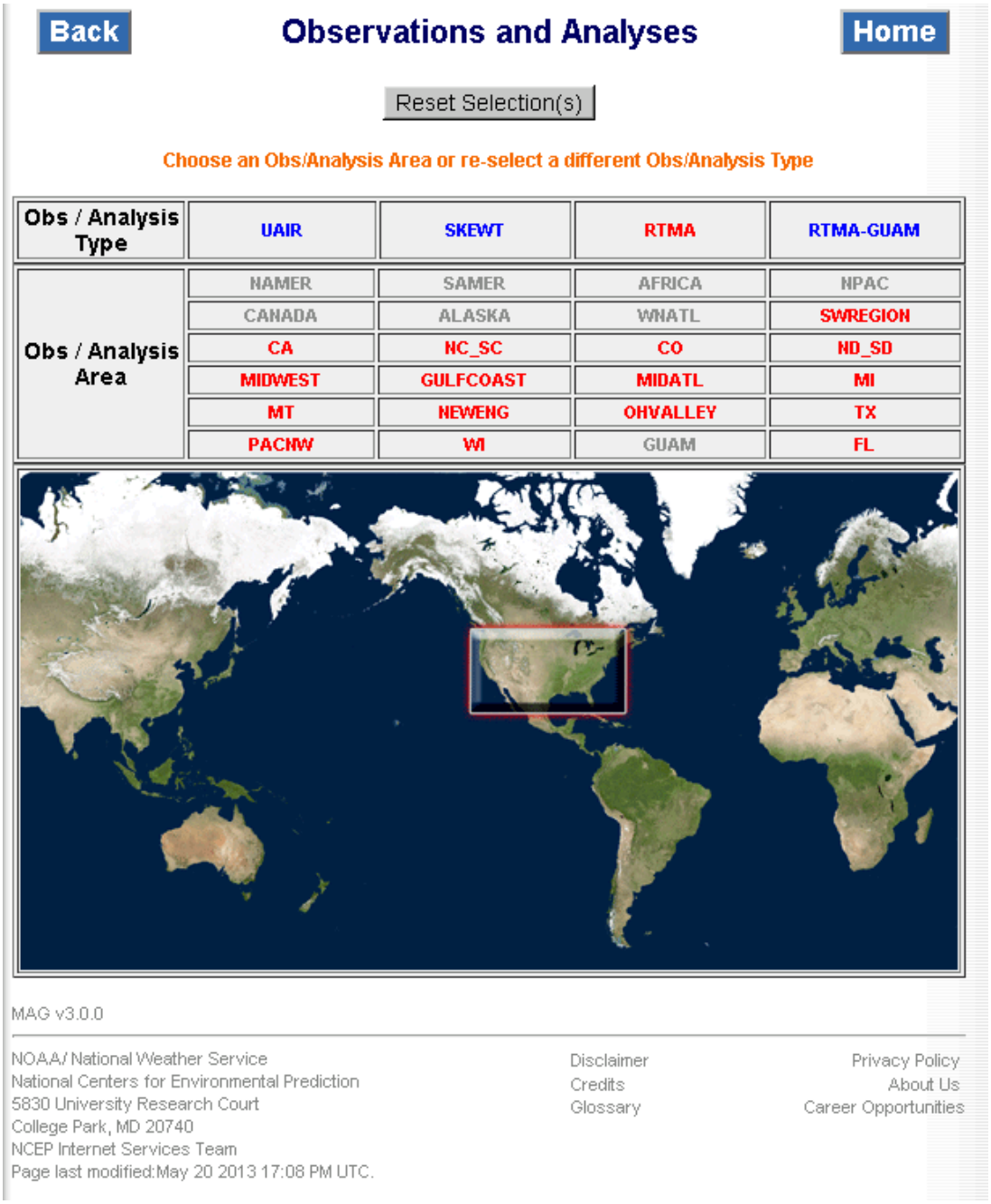


Figure 16: Observations and Analyses page for "RTMA"

RTMA/RTMA-GUAM Parameter page

The RTMA page presents the user with the available cycles with the default being latest cycle which is highlighted in red and is displayed in the right most cell as shown in Figure 16. The available Surface Parameter names are displayed above the map. When the user selects one of the parameters, the page is redirected to the graphics page as shown in Figure 17.

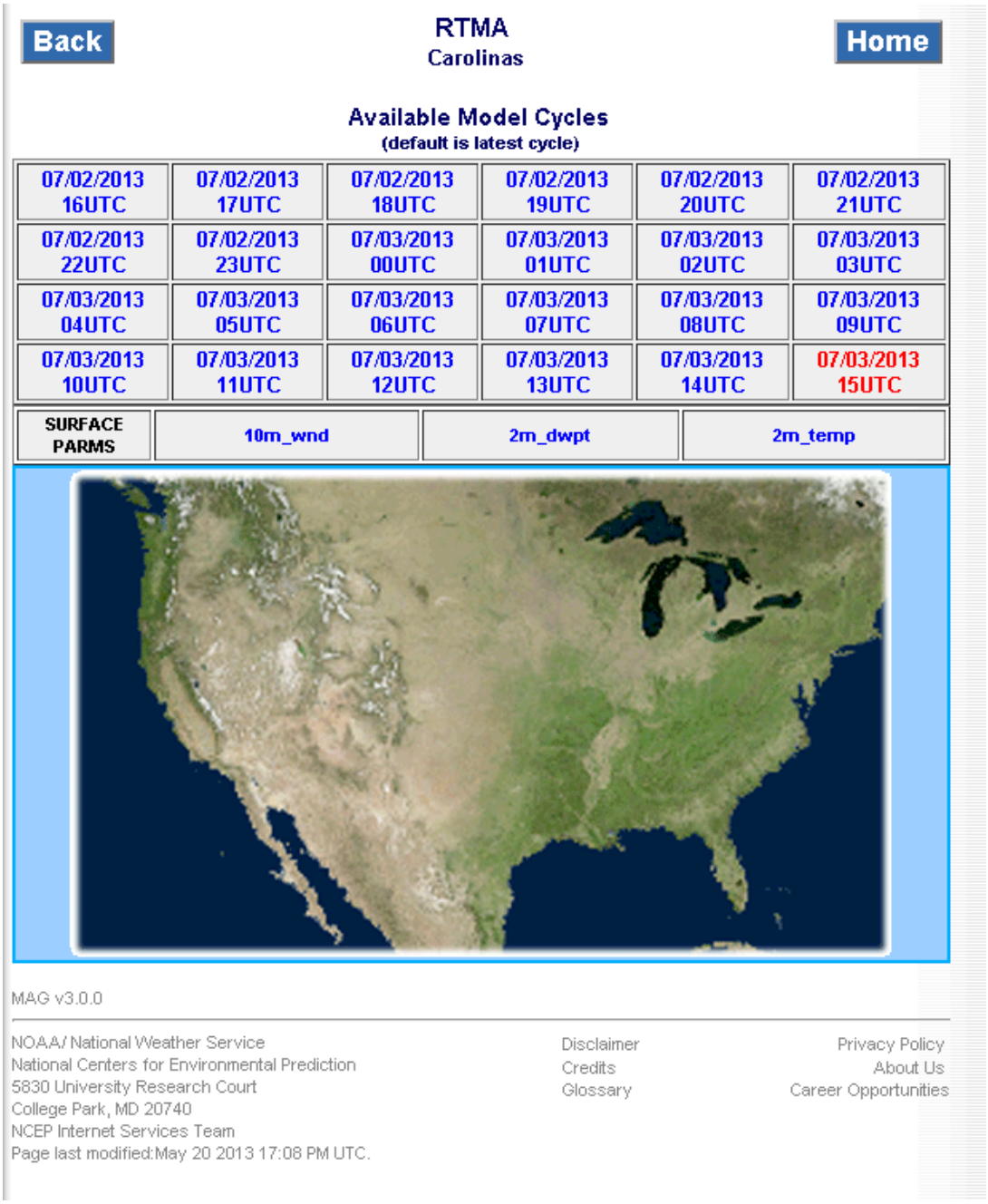


Figure 17: RTMA page

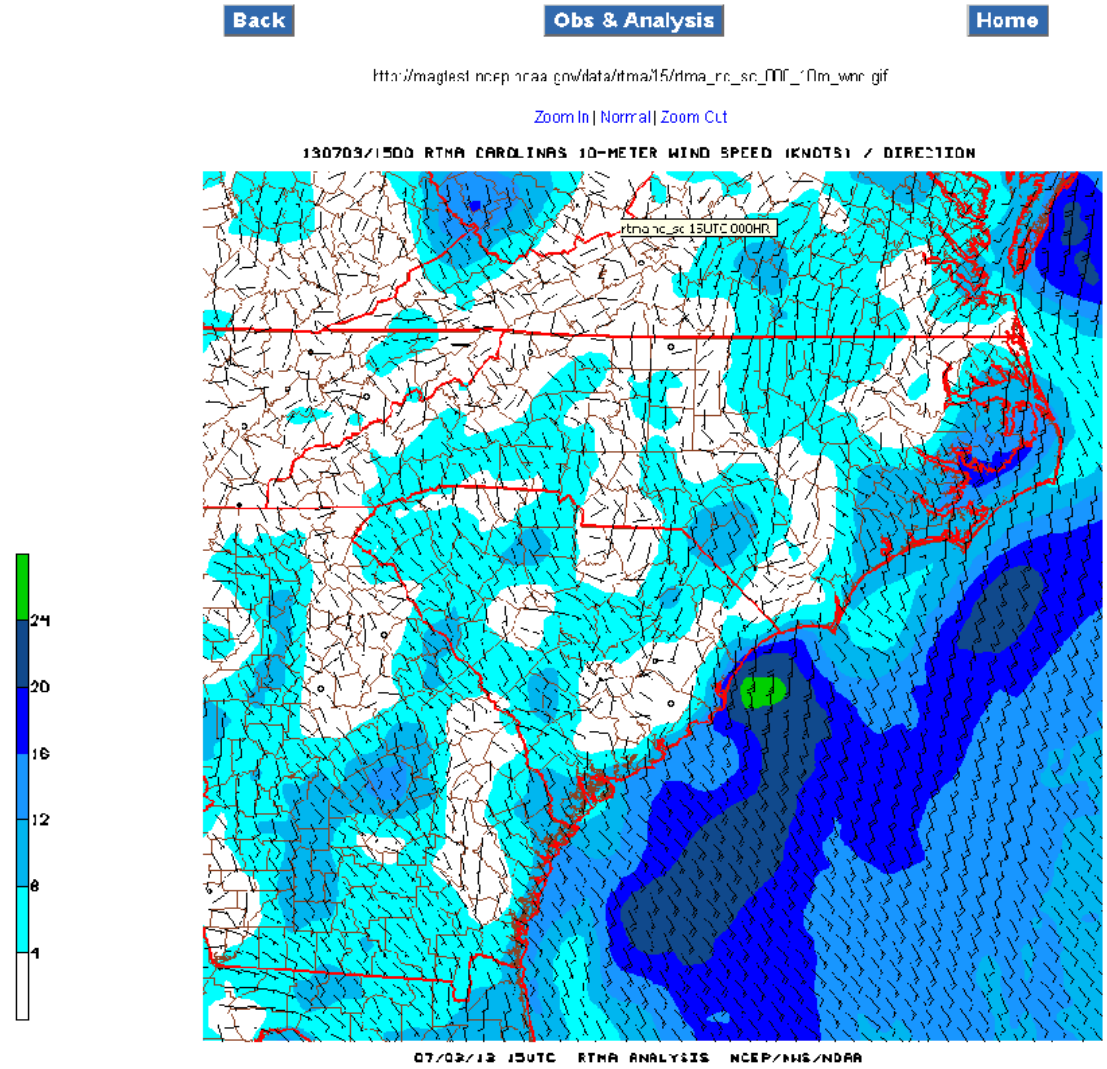


Figure 18: RTMA graphics

The user can zoom-in/zoom-out or choose a Normal size of viewing the image by clicking on the "Zoom In | Normal | Zoom Out " links provided just above the image.

The static URL to view the image is provided just below the title of the page.

Tropical Guidance Page

The Tropical Guidance Page displays the available Model type and the Storm name as shown in Figure 19. When the user selects a model the corresponding storm name is highlighted in white.

After the users select the desired storm name, then they are directed to the Tropical Guidance parameter page as shown in Figure20.

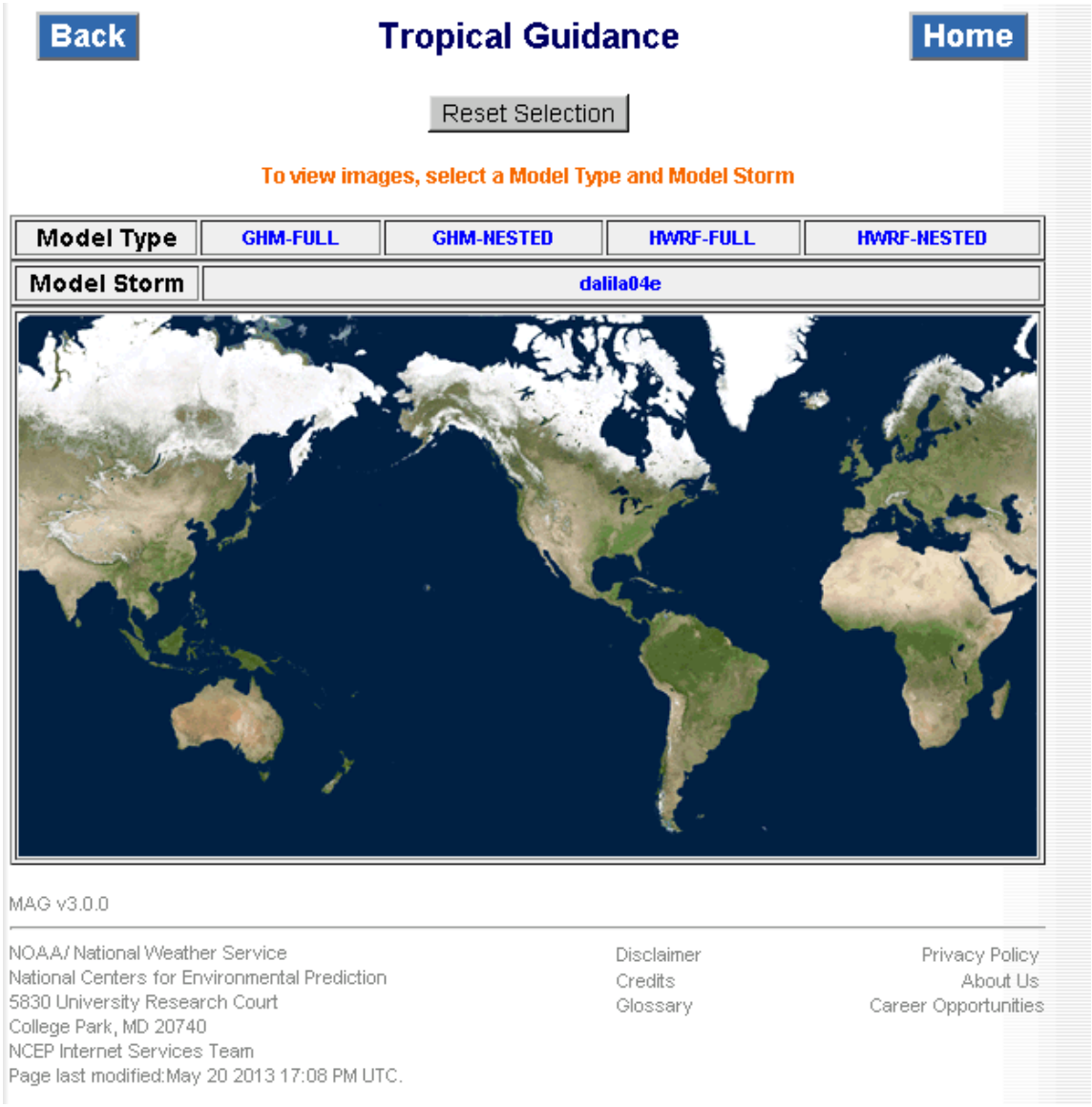


Figure 19: Tropical Guidance page.

Tropical Guidance Parameter page:

This page presents the user with

- The parameter names available for a selected Model and Storm name.
- The available model cycles. Note: the cycles are displayed with the latest cycle as the default and is displayed on the right most cell and is highlighted in red
- The available forecast hours are displayed once the parameter is selected (see Figure 22).

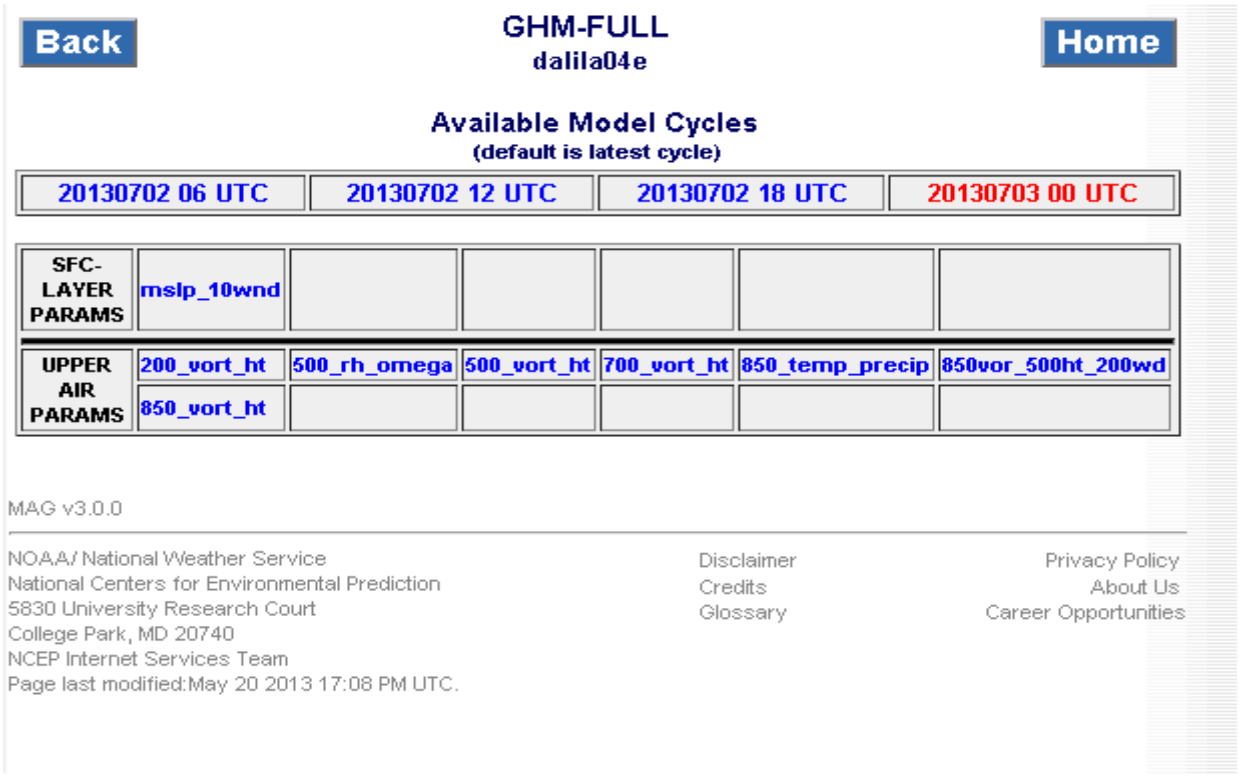


Figure 20: Tropical Guidance Parameter page

To view the graphics for any parameter:

- Select the
    - Model cycle
    - Forecast hour (default is always ‘loop all’).
    - Parameter name

User selection is highlighted in white.

- Once all the above three selections have been made the page automatically redirects to the graphics display page. If the forecast hour is ‘Loop All’ or “1/2/3/4/5 Day loop”, then the user is presented with a JavaScript page that loops through all the images for all forecast hours as shown in Figure 22. If a distinct forecast hour is chosen from the drop down list, the user is shown a gif image.

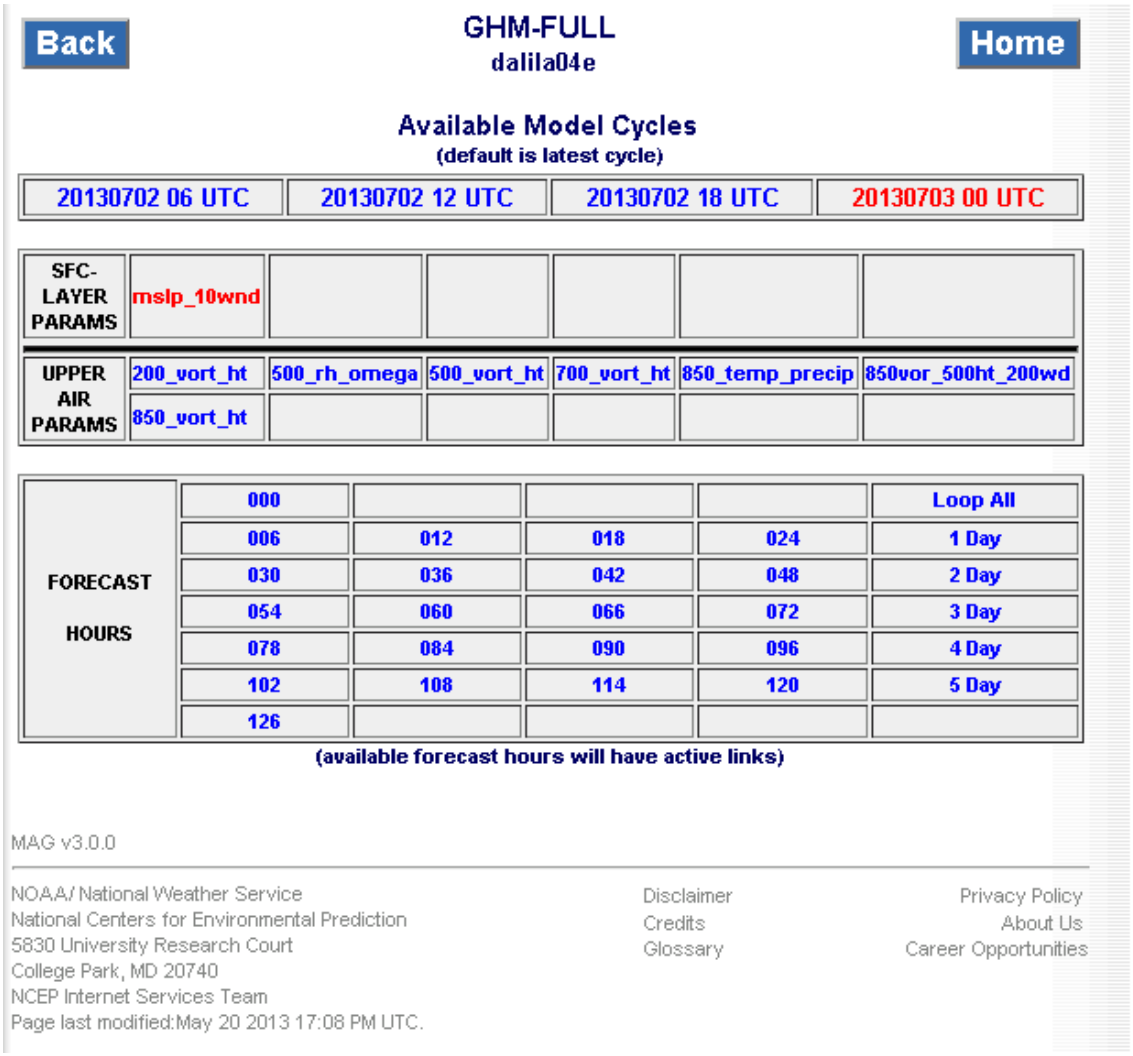


Figure 21: Tropical Guidance Parameter page with available forecast hours and loop options

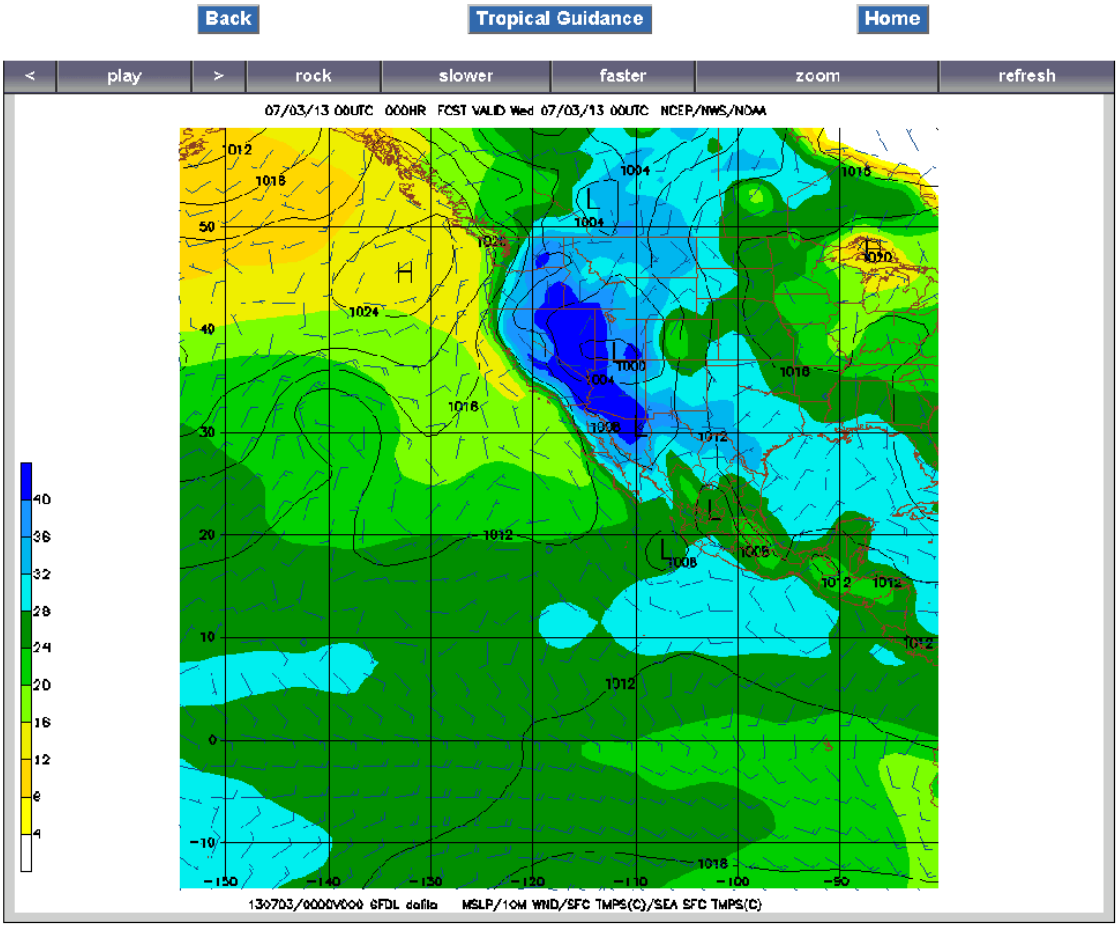


Figure 22: JavaScript animation page for Tropical Guidance parameter

When there are no active storms a page will be displayed notifying the user that no storms are available at this time.